

INDIAN DRAGONFLIES.

BY

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(With 3 Text-figures.)

(Continued from page 620 of this Volume.)

Part XIV.

Family—AESCHNIDÆ (Cont.).

Since the Ms. of Part XII went to the press, Mr. C. F. Beeson of the Forest Research Institute, Dehra Dun, has sent me several new species belonging to the family *Aeschnidæ* and as these have not yet been described, I take this opportunity of including them in our list.

***Gynacanthæschna viridifrons*, sp. nov.**

1 ♂ Gahan, Bashahs Div., Burma, 26, IX, 21, coll. C. F. C. Beeson.

Type deposited in the Forest Research Institute, Dehra Dun.

(The specimen is somewhat crushed or flattened out by pressure in the paper packet, so that the shape of the head is doubtful.)

Abdomen 41 mm. Hindwing 40 mm. Anal appendages 4 mm.

Head. Labium bright citron yellow, labrum greenish yellow, narrowly bordered with black; epistome similarly coloured; frons above bright greenish yellow changing to olivaceous brown in front; eyes dark brown; occiput greenish.

Thorax dark brown marked on the dorsum with a bright yellow, antehumeral stripe, square at both ends, a small spot of the same colour just above the upper end of the stripe and also the antealar sinus. Laterally the whole of the metepimeron grass green as is also a broad, posthumeral stripe.

Legs dark reddish brown, the distal ends of femora and tarsi black. Hind femora with a row of extremely closely-set spines and two large ones at the distal end.

Wings hyaline, stigma black, small, exactly similar to that of *G. sikkima*, the brace meeting it distal to its proximal end; nodal index:— $\frac{15-19}{17-15} \mid \frac{19-15}{14-16}$
3-4 cells in trigone of forewing, 4 in that of hind; 3-4 median nervures in forewing, 5 in the hind; 6-7 cubital nervures in forewing, 5-6 in the hind; 5-6 cells in the loop; *Rs* forked a long way before the stigma; membrane white; hypertrigones traversed 3 times in forewing, 3-4 times in the hind; anal triangle with 4-6 cells.

Abdomen reddish black to blackish brown marked with grass green as follows: the sides of segment 1 and 2 and the middorsum of the latter narrowly, segments 3 to 7 have the middorsal carina and a fine, apical, dorsal annule, segments 8, 9 and 10 have the dorsal carina finely yellow and 8 and 9 have also a lateral comma-shaped spot at the basal end.

Segment 10 strongly keeled.

Anal appendages. Superior nearly as long as the last two segments, curved, broad at the base, narrowing and flattening afterwards and dilating gradually

towards the apex which is blunt, black, Inferior triangular, two-thirds the length of superior, bright yellow, curling strongly upward.

Distinguished from *sikkima* by the bright colour of the lips and frons also by the blunt tipped anal superior appendages, etc.

Anax goliathus, sp. nov.

1 ♀ Magayi, Insein, Burma, 30, XI, 21, at dusk, coll. C. F. C. Beeson.

Type deposited in the Forest Research Institute, Dehra Dun.

Abdomen with appendages 56 mm. Hindwing 53 mm.

Head. Eyes dark olivaceous brown, probably greenish in the living state. Labium and labrum bright ochreous, the latter bordered narrowly with dark brown; face greenish yellow, upper surface of frons sky blue, the base narrowly black with a small, triangular projection in the middle line; vesicle greenish; occiput yellow, the surface wrinkled, posterior border slightly concave, simple.

Thorax uniform grass green, beneath violaceous brown.

Legs black, the femora dark reddish brown, hind femora with a row of small closely-set, evenly sized spines and 2 to 3 larger ones at the distal end.

Abdomen very tumid at the base, cylindrical and tapering thereafter, 7, 8 and 9 somewhat dilated. Segments 1 and 2 grass green except at the apical half of the dorsum of the 2nd which is blue, 3rd segment with a small patch of blue at the sides, basad, rest of abdomen dark blackish brown, each segment marked with 3 lateral, dark yellow spots, one basal, one apical and the third subbasal; segment 7 has only 2 of these spots and 8 and 9 only one which is situated apicalward.

Anal appendages very short, spatulate, rounded at the tips, shaped very much like those of *A. petalura*.

Dentigerous plate rounded, coated with minute, black spines, very similar to the plate of *A. guttatus*.

Wings very broad and hyaline, the bases of the hind enfurmed in the subcostal space and anal triangle; stigma pale brown, very long and slender; trigones of forewings with 6 cells, 4 in the hind; nodal index $\frac{8-16}{10-14} \mid \frac{18-7}{13-10}$; membrane black, its extreme base white, very long; 12 cells^s in the loop; hypertrigones traversed 3 times in the forewing, 2 in the hind; 5 cubital nervures in the forewing, 4 in the hind; costa yellow.

The species which belongs to the *guttatus* group is very similar to the female of *A. guttatus* but is easily distinguished from all other species by the distinctive character of its anal appendages.

Genus—*AMPHLESCHNA*, SELYS.

Amphieschna, Selys, Trans. Ent. Soc., Lond., 1871, p. 413; Bull. Acad. Belg. (3) v., p. 737 (1883).

Eyes widely contiguous; frons rounded; occiput small; wings moderately broad and long, reticulation close, stigma small, membrane mediocre, trigones elongate, of 5 to 6 cells, cubital space and hypertrigones traversed several times, basal space traversed, *Rs.* bifurcated well before the level of stigma, 3 to 4 rows of cells between *Rs.* and *Rspl.* Abdomen long and subcylindrical, constricted at the 3rd segment in the male; anal appendages sublanceolate, excavate on the inner border, the inferior appendage short and subtriangular.

Female. Dentigerous plate denticulate, armed with 6 spines.

Type. *A. ampla*, Ramb.

Hab. Southern Asia.

***Amphiaschna beelsoni*, sp. nov.**

1 ♂ Magavi, Insein, Burma, 38, XI, 21. "Taken at dusk," coll. C. F. C, Beeson.

Type deposited in the Forest Research Institute, Dehra Dun.

Abdomen 46 mm. Hindwing 43 mm. Anal appendages 6 mm.

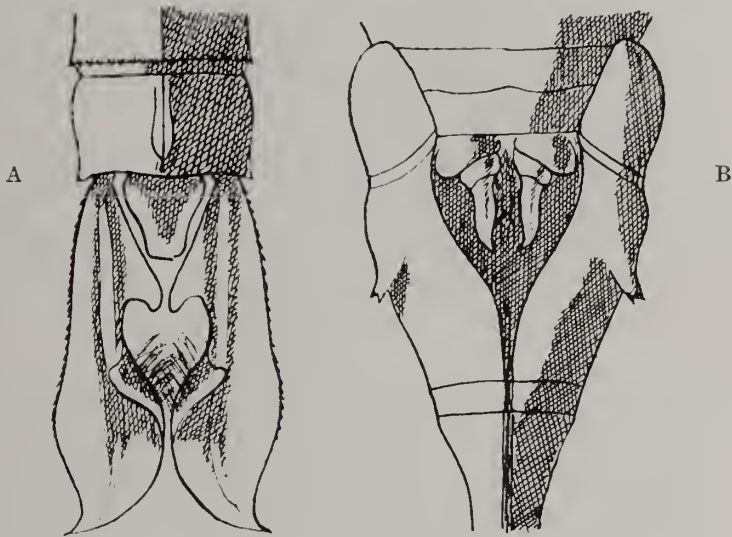


Fig. 1 A. Anal appendages and B. Genitalia of *Amphiaschna beelsoni* (male)

Head globular, eyes dark brown, very broadly contiguous; occiput very small, pale whitish green; labium brownish yellow; labrum, epistome and frons olivaceous, upper surface of latter with a subbasal, black line at its centre, not traversing its whole breadth. Face very narrow.

Thorax dark olivaceous, with bright greenish yellow spots at bases of all wings. No other markings.

Legs reddish brown, the knee-joints darker; hind femora with a row of closely-set, robust spines, gradually lengthening distally.

Wings faintly saffronated, the hind the more so and especially towards its basal half; stigma pale brown, rather small, that of forewing longer than that of hind; forewing 3.5 mm., hindwing 3.0 mm., outer border strongly bevelled, braced, the brace with a slight curve; trigone of forewing with 5-6 cells, the hind similar; a single nervure in the median space in all wings; 7 cubital nervures in forewing, 5 in the hind; 3 cells in anal triangle; nodal index

12-22 | 22-12

16-15 | 15-16; 8 cells in the loop; *Rs.* forked some way before the stigma, 3 rows between the forking; 3 rows of cells between *Rs.* and *Rspl.* in forewing, 4 in the hind; membrane greyish, almost absent; hypertrigones with 5 nervures in forewing, 4 in the hind; arc strongly angulated, sectors arising from its middle.

Abdomen tumid at base, segment 3 constricted, cylindrical thereafter, the two last segments slightly dilated; oreillets robust, with 3-4 robust teeth on the free border; segment 1 olivaceous green as is also the basal half of 2, the apical half of latter sky blue, remaining segments pale olivaceous brown with black, apical rings.

Superior anal appendages very long and highly specialized, considerably longer than the two last abdominal segments, shaped like the blade of a kukri, the edge directed inwards, tapered at base, broad at apex which ends in a sharp, outwardly curved point; inner border with a deep indentation at its middle third and a broad, spine-like projection basal to it. The two indentations, by apposition enclose a large fenestration. Inferior appendage less than one-third the length of superior, blunt at apex, broad at base. Dark olivaceous brown, the inferior paler at its base.

The edge of the indentation of the superior is raised into a prominent rib which is studded with minute, black tubercles from each of which arises a long, brownish hair.

This is the first record of any member of the genus *Amphiaschna* from within Indian limits.

Genus—GYNACANTHA, RAMB.

Gynacantha, Ramb., Ins. Nevr. (1842); Selys, Sagra, Hist. Cuba. Ins., p. 459 (1857); Hagen, Neur. N. Amer., p. 31 (1861); Kirby, Cat. Odon., p. 94 (1890); Martin, Cat. Coll. Selys. fas. XIX, XX, p. 167 (1909).

Acanthagyna, Kirby, Cat. Odon., p. 94 (1890).

Selysioptlebia, Forster, Insekten-Borneo (1904).

Austrogynacantha, Tillyard, Proc. Lin. Soc., N.S.W.V., 33 (1908).

Head large and globular, eyes broadly contiguous, face deep and narrow, occiput very small; wings long and broad, reticulation very close, trigones elongate, median space entire, submedian and hypertrigones traversed, *Rs.* bifurcated, *Rspl.* widely separated from it so as to enclose 4-7 rows of cells between them, stigma usually rather long, membrane short, narrow or obsolete. Abdomen long and slender, the 3rd segment usually but not always constricted. Legs moderately short, the hind femora usually with a row of gradually lengthening, closely-set spines.

Anal appendages very long and very narrow, sublanceolate, the inferior triangular, shorter than the superior.

Dentigerous plate of female formed by a prolongation of the sides of the 10th segment, on the end of which are two, robust, long spines, separating like the prongs of a hay-fork.

This genus comprises a large group of dull coloured dragonflies, all crepuscular in habits. Their wings are so thickly studded beneath with small spines as to give them a particular velvety feel analagous to a similar condition found in the genera *Zyxomma* and *Tholymis* both of which are also crepuscular in habits. The dull colours are in keeping with their nocturnal habits. Most are insects of large size and none can be said to be small. The female deposits its eggs in dry or damp earth in the dried up beds of watercourses. From these sites the ova are washed down by the first freshet and quickly hatch out. The dentigerous plate is peculiarly fitted for this work, serving to steady the end of the abdomen whilst the ovipositor is driven into the earth between the prongs of the dentigerous fork. In this act the long anal appendages apparently get in the way and are soon fractured off. It is rare to find an old female with entire anal appendages.

All are northern species except one or two from Ceylon and *G. millardi* which extends widely throughout Southern India.

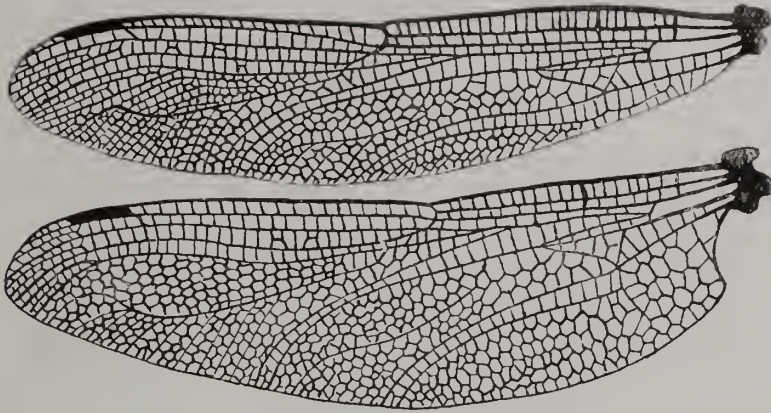


Fig. 2. Wings of *Gynacantha khasiaca*, Maclach. (male).

Gynacantha millardi, Fras, Bombay Nat. Hist. Journ., Vol. XXVII, No. 1, p. 147 (1920); Laid. Rec. Ind. Mus., Vol. XXII, p. 91 (1921).

Male. Abdomen 46 mm. Hindwing 44 mm.

Head. Eyes deep blue in some specimens, olivaceous green in others, very broadly contiguous; in hill specimens the eyes may be a pale dove grey, pale yellow behind and pale greenish yellow below. Face very deep and very narrow, pale olivaceous grey or putty coloured; labium pale yellow as is also the occiput. In specimens from Poona the face, labrum and frons are pale green, the latter being unmarked.

Prothorax and thorax bright foliage green, unmarked but the female sometimes has the dorsum brownish.

Legs brown, or yellowish, the femora with minute spines.

Abdomen pale fawn or darker brown, the sides of the first three segments bright foliage green. Oreillets green or brown. The 2nd segment has a mid-dorsal, transverse streak of yellowish broken at the middle.

The 3rd segment is hardly constricted, thus differing from the majority of the genus.

Wings hyaline, long and broad; stigma pale brown; hypertrigones traversed 3 times; trigones with 6 cells in the forewing, 5 in the hind, 9 to 10 cells in the loop; membrane absent; 7 cubital nervures in the forewing, 6 in the hind; nodal index

| | |
|-------|-------|
| 16-22 | 20-15 |
| 14-16 | 15-17 |

Superior anal appendages long and slim, longer than the two last abdominal segments, fringed inwardly with long black hairs, the inner border distinctly sinuous, the outer straight. Inferior appendage not half the length of the superior, turning up, narrowly triangular.

Female almost exactly similar to the male, the abdomen paler, the intersegmental joints and jugal joints outlined in black.

Dentigerous plate shaped like a hay fork, the two prongs in extension of the produced sides of the 10th segment.

Anal appendages shorter than those of the male and broadening towards the apex internally, reddish brown, the hairs on the inner side not so evident.

Hab. The type and many other specimens were taken in the Empress Gardens, Poona, hiding up under the drooping branches of mango trees or clinging to the inside of green hedges. They took to the wing about dusk and continued flying to long after dark. I have since received specimens from Mr. Hearsey, from Palghat, which do not differ in any way from the Poona examples. Still more recently I have taken the insect and seen it widely scattered throughout the Nilgiris at elevations of over 7,000 ft. At this altitude, being cooler, it appears on the wing at about half past two or three and continues on the wing until about six when it apparently grows too cold for it. I have seen them hovering at about a foot from the ground, in front of deodar hedges around the Ooty lake or describing figures of eight at a few inches from the ground, when they were well nigh invisible. Tropical, crepuscular dragonflies apparently become diurnal in colder climates.

Gynacantha khasiaca, MacLachlan, Ann. Mag. Nat. Hist. (6), p. 429 (1895); Laid. Rec. Ind. Mus., Vol. VIII, p. 340 (1914); Martin, Cat. Coll. Selys, pp. 202-203 (fig. 207), XIX, XX (1909).

Male. Abdomen 54 mm. Hindwing 45 mm.

Head. Eyes very large and broadly contiguous, green, paler below where they have a yellowish tint; occiput yellow; labium and lower part of labrum ochreous, the rest of face olivaceous with a slight ochreous tinting. Above frons a black, T-shaped mark on a greenish background.

Prothorax and thorax bright olivaceous green, the hind, lateral suture brown and a brownish tinting of the dorsum.

Legs black, bases of femora and tibiae reddish brown. Hind femora with rows of robust, closely-set, gradually lengthening spines.

Wings hyaline or in adults more or less deeply enfumed; stigma light brown, braced, rather large; 5-6 cells in trigones of forewing, 5 in the hind; nodal 18-27 | 25-17

index ——— ———; hypertrigones traversed 7-8 times in the forewing, 5-6 in 20-19 | 18-19

the hind; loop with 8 cells but its limits very obscure; 7 cubital nervures in the forewing, 6 in the hind; membrane very small, white.

Abdomen very long and slim, tumid at the base, markedly constricted at the base of the 3rd segment, cylindrical and of even width thereafter.

Blackish brown, segment 1 pale on the dorsum, a broad, green spot on the sides, 2 with the dorsal carina narrowly green and a transverse stripe about its middle of the same colour which does not quite meet the green on the carina, apically there is another green patch, whilst the oreillets and the sides are turquoise blue, except for a small spot of green beneath the oreillet, segment 3 has the basal and lateral part turquoise blue, whilst segments 3 to 6 have medial, transverse, greenish marks and yellowish, apical markings on the dorsum.

Anal appendages black, very long and slim, the inferior being about three-fourths the length of the superior. The latter are a little expanded at the apex where they end in a fine, long inwardly curved point.

Female very similar to the male, the appendages shorter.

This species is easily distinguished from all others by the relatively great length of the inferior anal appendage, about three fourths that of the superior (in no others does it reach more than half the length of the superior). The type is from the Khasia Hills, but it has also been reported from the Abor Country and I have a specimen from Lower Burma. The above description is taken from this

specimen and differs in a few respects from the type but I have no doubt but that it belongs to *khasiaca*.

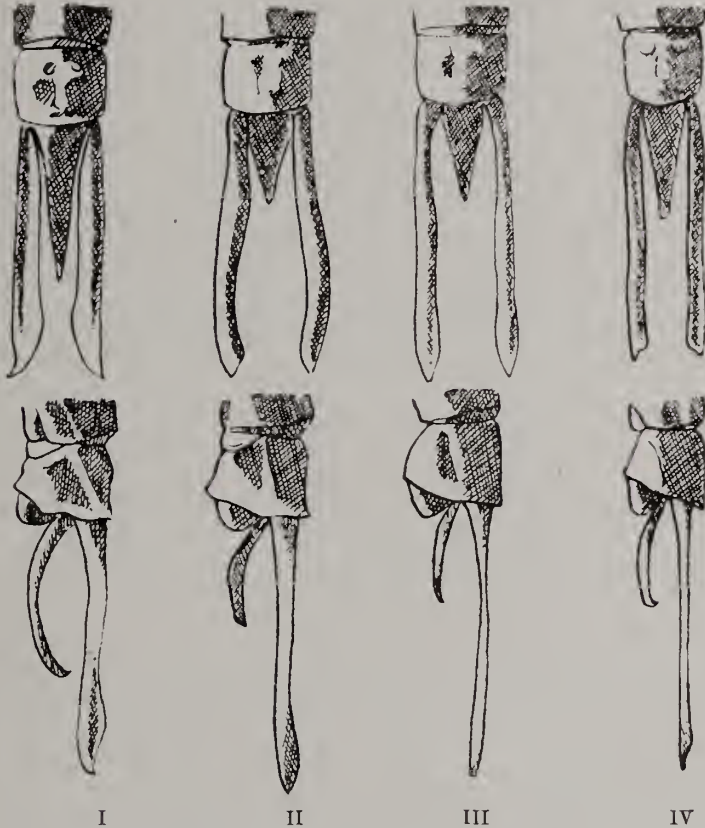


Fig. 3. Anal appendages of:—1. *G. khasiaca*. 2. *G. furcata*. 3. *G. bayadera*. 4. *G. o'doneli*.

Gynacantha bainbriggei, Fras, Memoirs of Pusa. Vol. VII, Nos. 7 and 8, June 1922.

Male. Abdomen 50 mm. Hindwing 47 mm.

Head. Eyes bluish grey, frons pale brown with an ill-defined, black, T-shaped mark above; lips and face pale brownish yellow, unmarked; occiput yellowish; a fringe of long hairs along the ophthalmic suture.

Prothorax black on the dorsum, brown on the sides.

Thorax pale brown with diffuse, mid-dorsal and humeral blackish fasciæ, each traversed by a dark line. No markings on the sides.

Legs black, the femora brown at the base, sometimes entirely pale brown.

Wings hyaline; stigma pale brown, 3.5 mm. in length; hypertrigones traversed 6-8 times; trigones variable, traversed by 3-5 nervures; loop with 11-13 cells;

21-26 | 25-22

nodal index

21-21 | 20-21

Abdomen pale brown marked with shades of grey and black and a pair of sky blue spots on the 2nd to 7th segments. On the 3rd segment are a pair of similarly

coloured spots at the base. The apical spots are edged apically and outwardly with black, this colour being continued forward subdorsally and tapering away until finally lost in the ground colour.

The last 3 segments black, unmarked. Oreillets large, sky blue above, dark beneath, the posterior border minutely toothed.

Anal appendages very long and very narrow, 7 mm. in length, fringed inwardly with long hairs, inner border slightly sinuous; inferior triangular, narrow, less than half the length of the superior.

Female. Abdomen 53 mm. Hindwing 50 mm.

Almost exactly similar to the male. The wings rather deeply enfumed, usually a dirty brown especially at the apices.

Labrum, labium and face distinctly ochreous. Thorax greenish. Legs a light brown, the hind femora with a row of closely set, gradually lengthening spines.

Dentigerous plate as for genus. Anal appendages long and narrow, but in all specimens which I have seen they are fractured off about half way.

Mr. Bainbrigge Fletcher, who discovered this species, has seen it ovipositing in dry earth, in a dried up water course. Eggs, which he secured from samples of the soil, developed into larvæ in a few hours.

The species was found at Gauhati and most specimens were beaten up from dry bamboo jungle during the day. Ovipositing was seen late in the afternoon.

Gynacantha bayadera, Selys, Odonat. Birmanie, Ann. Mus. Genov., XXX, p. 400 (1891); Martin, Cat. Coll. Selys. XIX, XX, p. 198 (1909).

Male. Abdomen 45 mm. Hindwing 41 mm.

Labium, labrum and face olivaceous; frons yellowish, its crest black but no T-shaped marking above. Occiput yellow, very small.

Prothorax and thorax foliage green, unmarked.

Legs palest brown.

Abdomen slightly tumid at the base, a little constricted at the 3rd segment or this scarcely noticeable, brown marked with yellow as follows:—segment 2 with an annule and two subapical lunules, 3 to 7 with basal annule, two median, linear spots and two terminal lunules; 8 and 9 with longitudinal, yellow markings on the sides.

Wings broad, slightly enfumed, costa yellow; stigma yellowish, of medium size; membrane small, blackish; Rs. forked just under the origin of stigma; anal

triangular broad and short, with 3 cells; nodal index $\frac{12-22}{17-18} \mid \frac{18-17}{17-19}$. Base of

wings often saffronated.

Anal appendages brown, long and narrow, the superior rather longer than the last two abdominal segments, rather sinuous; inferior rather less than half the length of superior, narrowly triangular.

Female closely similar to the male. Appendages brown, slender at the base long, foliate with slender, rounded ends.

Abdomen 45-47 mm; hindwing 40-41 mm.

Reported from India and Burma (Sikkim, Bhamo). I have not seen examples of this species.

Gynacantha hanumana, Fras., Memoirs of Pusa, Vol. VII, Nos. 7 and 8, p. 76, June 1922.

Male. Abdomen 43 mm. Hindwing 44 mm. Anal appendages 4.5 mm.

Head. Labrum, labium and face palest brown or fawn; frons pale olivaceous marked with a thick, black T-shaped mark above; eyes olivaceous, occiput yellow, very minute.

Prothorax blackish.

Thora: pale violaceous grey, clouded with sooty grey on the sides, the mid-dorsal *crina* diffusely black.

Legs pale brown, yellowish, or ochreous; hind femora with a row of very short spines with some longer ones at the distal end; tibial spines long and numerous, claw-hooks basal, robust.

Wings hyaline but distinctly enfumed; loop with 12-13 cells; stigma 3·7 mm. in the forewing, that of hindwing smaller, whitish brown with dark borders, braced sinuously; 8-10 cubital nervures in the forewing, 7 in the hind; 6 cells in trigone of forewing, 5-6 in the hind; nodal index $\frac{19-26}{20-19} \left| \frac{24-18}{19-21} \right|$; hypertrigones traversed 6 times in the forewing, 5-6 in the hind.

Abdomen very long and slender, the 3rd segment constricted at the base, cylindrical thereafter to the anal end, transverse ridges on segments 2-8. Bluey grey in colour, dorsum of segments brownish black, broadly so at the apex, this colour gradually fading basally, the 3rd segment basal to the transverse ridge, pale greyish blue, the oreillets turquoise blue, narrowly margined with black, segments 3 to 7 have also a pair of apical, blue spots.

Anal appendages long, narrow and pointed at the apex, blackish brown, the inferior two fifths the length of the superior, the superior fringed densely with black hairs.

Type in the Pusa collection, taken by Mr. C. M. Inglis at Mangpu, 18-2-20, 5,200 ft, Darjiling Dist.

Gynacantha furcata, Ramb., Ins, Nevr. p. 210 (1842); Laid. Rec. Ind. Mus. Vol. XXII, p. 91 (1921); Kirby, Linn. Soc. Journ. Zool. XXIV, p. 558; id, Cat. Odonata, p. 95 (1890).

Male. Abdomen 53 mm. Hindwing 45 mm.

Head. Labrum, labium and face greenish yellow; frons greenish with a black stripe across the crest but no tail converting it into a "T".

Thorax greenish yellow, unmarked.

Legs reddish.

Abdomen tumid at the base, constricted at the 3rd segment, cylindrical thereafter. An oblique, subdorsal, yellow spot on most segments about the middle.

Anal appendages long and slender

Wings hyaline, reticulation open; stigma broad and yellowish in colour.

Martin's male from Tonkin differs somewhat from this meagre description. The legs are reddish with black articulations. The abdomen is mahogany brown with a greenish spot on the dorsum of the 2nd segment, and 2 median and 2 apical, yellow spots on all segments from 2 to 7.

The superior appendages are brown in the middle, black at base and apex, moderately slender at the base, enlarging towards the apex which is spatulate and pointed. The inner border sinuous. Inferior black, broadly triangular, a little more than one-third the length of the superior.

The wings are enfumed at the base, the anal triangle is broad and short, the nodal index:—18-28/24-20 in forewings.

The female from Tonkin has the face olivaceous, the frons with a well-marked T above, the thorax brown, marked with blackish; other points as for the male.

Martin is inclined to regard this species as a race of *hyalina*.

The male in the Selysian collection has the abdomen 48 mm., hindwing 40 mm. Selys regards it with some doubt. The type male is in the Selysian collection, the paratypes, from Tonkin, in Martin's collection. Kirby has reported it from Ceylon so I include it here, although with some doubt.

Gynacantha saltatrix, Martin, Cat. coll. Selys. Fasc. XIX, XX (fig. 199), pp. 194, 195 (1909); Laid. Rec. Ind. Mus., Vol. XXII., p. 91 (1921).

Male. Abdomen 42 mm. Hindwing 35 mm.

Head. Labium, labrum, face and frons pale greenish yellow, the frons marked with a thick, black T above; occiput very small, pale yellow.

Thorax broad, brown above marked with obscure, green, humeral bands, the sides greenish.

Legs pale yellowish brown.

Abdomen tumid at the base, constricted at the 3rd segment, broadening again at the 4th and thereafter tapering to the anal end, reddish brown spotted with green. The 1st segment with a large blue spot at its base, the 2nd with a dorsal and two central green spots and two lateral, apical spots of green, 3 with an oblique, medial line and an apical, slender line of green, 4 to 8 with the medial line and two apical spots, 9 with 2 subapical spots of yellow, 10 reddish, unmarked, bordered with black.

Superior anal appendages longer than segments 9 and 10, slender, of even breadth from base to apex where they are slightly broadened and pointed, fringed internally with black hairs. Inferior about one-third the length of the superior, narrowly triangular, pale yellow with the apex black.

Wings long and broad, hyaline, costa yellow; stigma moderately long and slender, pale brown; membrane nearly obsolete, white; *Rs.* forking a little before the stigma; 5 cells in the trigones; anal triangle with 3 cells; nodal index:—

| | | |
|-------|--|---|
| 15-21 | | . |
| 17-15 | | . |

Closely resembles *bayadera*, differs as follows:—by the well marked "T" on frons, by the tumid basal segments of abdomen, the very large oreillets, the 3rd segment of abdomen very constricted, and by the even sized superior anal appendages. Differs from *subinterrupta* by its smaller size and by the absence of brown spots at the base of the wings.

Type male in Martin's collection. Laidlaw mentions a male from Mazbat, Mangaldai Dist., Assam, collected by Mr. S. Kemp and now in the Indian Museum (abdomen 42, anal appendages 6 mm, hindwing 39 mm.). The type is from Tonkin.

Gynacantha basiguttata, Selys., Ann. Soc. Esp. XXI, p. 20 (1842); Martin, Cat. eoll. Selys., XIX, XX, pp. 192-193 (1909); Kruger, Stett. Ent. Zeit. pp. 283-284, (1895); Ris. Ann. Soc. Ent. Belg. LV, pp. 246-247, fig. 13 (1911); Laid. Rec. Ind. Mus., Vol. XXII, p. 91 (1921); Kirby, Cat. Odon. p. 95 (1890).

Male. Abdomen 54 mm. Hindwing 45 mm.

Head. Labium, labrum, face and frons brownish yellow, the latter yellow above marked with a black T; occiput very small, brown.

Thorax brownish, greenish brown or reddish brown, probably greenish during life. Legs all black.

Abdomen very tumid at base, markedly constricted at the 3rd segment and then cylindrical to the end, black marked with yellow as follows:—segment 1 yellowish at the sides, 2 yellowish brown, the earina and a medial transverse line and the apical border black, 3 to 7 with a pair of medial and a pair of apical spots yellow, 8 with the median spots only. Oreillets large.

Wings slightly tinted with brown, sometimes deeply enfumed and with a reddish brown mark at the base extending as far out as the 1st antenodal nerve; stigma brown, very slender; membrane very small, grey; *Rs.* forking just before the stigma, with 7 rows of cells between it and *Rspl*; anal triangle with 3 or rarely 4 cells; tornus very accentuated; nodal index 22-30, 26-23 in forewings.

Superior anal appendages longer than segments 9 and 10, very slender at the base and for the basal three-fourths, then broadening and spatulate, fringed thickly with black hairs on the inner side at the ends.

Inferior appendages one-fifth the length of superior, brown, black at the end, nearly linear, narrowly triangular at the base.

Female similar to the male, the basal spot of wings more extensive, reaching to the 3rd antecubital nervure. Anal appendages very long and slender, broadening foliately in the second half.

Legs black (or yellow in teneral specimens).

Type in the Selysian collection from the Philippines. Reported from Burma.

Gynacantha subinterrupta, Ramb, Ins. Nevr. p. 212 (1842).

Acanthagyna subinterrupta, Kirby, Cat. Odon. p. 95 (1890); id, Linn. Soc., Journ. Zool., XXIV, p. 558.

Gynacantha subinterrupta, Martin, Cat. coll. Selys, fasc. XIX, XX, p. 193, (1909).

Male. Abdomen 58 mm. Hindwing 45 mm.

Head. Labium, labrum and face olivaceous yellow; frons yellow marked with a thick, black T above; occiput very small, black bordered behind with yellow, slightly notched and ciliated.

Thorax dark yellow or ochreous, rather darker on the dorsum, spotted with blue at the attachments of the wings. The sides yellowish.

Legs reddish yellow.

Abdomen very tumid at the base, markedly constricted at the 3rd segment, then cylindrical and of even width to the anal end. Oreillets large, bordered with 6 to 7 small teeth. Dark reddish brown, the bases of segments paler, each with a basal pair and an apical pair of ochreous spots, segment 1 is yellow at the base, 2 has only 2 median spots of yellow, 10 is red on the dorsum, black at its apical border.

Superior anal appendages long and slender, brown, considerably longer than the combined length of segments 9 and 10, very slender at the base, then dilated inwardly and again narrowing so that the inner border is sinuous; inferior very narrow, triangular, truncate at the apex which is turned up and slightly bifid.

Wings moderately broad, reticulation close, a little reddish at the base; membrane very small, whitish; stigma short, yellowish brown; costa yellow; some basal spots not very evident in the forewings but more marked in the hind between the subcosta and median nervures and submedian and postcosta; *Rs.* forked a little before the level of stigma; anal triangle with 3 cells; tornus rather prominent; nodal index 22-28, 30-22.

Female similar to the male, the abdomen more tumid at the base and the 3rd segment less constricted. Anal appendages long, slender, foliate.

Abdomen 57 mm. Hindwing 52 mm.

Type in the Selysian collection is from Java. Other specimens are from Papua. Hagen reports it from Rhabodda, Ceylon.

Gynacantha o'doneli, Fraser, Journ., Bom. Nat. Hist. Soc., Vol. XXVIII, p. 700, 1922.

Male. Abdomen 41 mm. Hindwing 39 mm. Anal appendages 4 mm.

Head. Labium brownish, labrum, face and epistome yellowish green, very rugose; upper surface of frons dark olivaceous green, unmarked; occiput bright yellow, rather small. Eyes brown but probably blue or green during life.

Prothorax pale fawn, the posterior lobe fringed with a ruff of long, yellowish hair.

Thorax olivaceous brown on the dorsum, greenish yellow on the sides.

Legs palest brown or yellowish, the hind femora with a row of closely set, evenly spaced, short but robust spines.

Wings very ragged, deeply and evenly suffused with brown; stigma brown;

| | | | |
|---------------|-------|-------|--|
| nodal index : | 13-22 | 18-13 | trigones with 5 cells; hypertrigones 4 |
| | 16-14 | 15-15 | |

times; loop with 15-16 cells; 4-5 rows of cells between *Rs* and *Rspl*; membrane absent; anal triangle with 3 cells.

Abdomen olivaceous green and brown, marked with darker brown and black apical rings towards the end of the segments. The 1st and 2nd segments are broadly green on the sides, the oreillets are large and bear 5-6 robust spines on the hinder border.

Superior anal appendages long and slender, the outer border nearly straight, the inner slightly sinuous and coated with long black hairs, the apex bevelled outwards and ending in a small point. Inferior appendage triangular, nearly half the length of the superior, curled up strongly.

The single male specimen of this insect was sent to me by Mr. H. V. O'Donel whom it is named after, from Hasimara Tea Estate, Duars, Bengal.

It bears a close resemblance to *G. millardi* but is very much smaller. The 3rd abdominal segment is also much more constricted and the wings are deeply enfumed. In size it is equivalent to the smallest known *Gynacantha saltatrix* but the relative sizes of abdomen and wings differ, being 42 to 35 mm. in *saltatrix*, to 41 to 39 mm. in *o'donelli*. It differs again by having the upper surface of frons unmarked.

Gynacantha hyalina, Selys. Bull. Acad. Belg. (3) V., p. 19 (1882).

Acanthagyna hyalina, Kirby, Cat. Odon., p. 95 (1890.)

Gynacantha hyalina, Krüger, Stett. Ent. Zeit. p. 275 (1899); Laid. Rec.

Ind. Mus., Vol. XXII, p. 90 (1921); Martin. Cat. coll. Selys. fasc.

XIX, XX, pp. 198-199, (fig. 203) (1909).

Male. Abdomen 52 mm. Hindwing 42 mm.

Female. Abdomen 56 mm. Hindwing 51 mm.

Male. Head entirely olivaceous, the frons only being marked with a thick, black "T" above.

Prothorax and thorax olivaceous brown in front and on dorsum, olivaceous on the sides, yellow beneath.

Abdomen blackish brown above, reddish beneath. The dorsal carina and articulations black. The 2nd segment bears very large oreillets, rounded behind and furnished with small teeth. The 3rd segment markedly constricted.

Legs slender, reddish brown, the femora darker at the distal ends on the inner side.

Wings hyaline, slightly enfumed and tinted with brown at the extreme base. Reticulation dark reddish, the costa brownish yellow. Stigma yellow, medium size, 0.3 mm, over 4 cells. The hindwing very broad, the membrane rudimentary, pale grey. 18 postnodal nervures and 24 antenodals to the forewing.

Superior anal appendages black, furnished with long hairs on the inner side before the apex, longer than the 9th and 10th abdominal segments together, 5 mm. straight, very slender, nearly cylindrical, a little thickened before the apex which tapers to a sharp point very slightly inclined outwards. Inferior appendage subtriangular, blunt, a little more than one-third the length of the superior.

Female. Similar to the male but the body and legs paler, the abdomen not constricted, the oreillets nearly absent. Stigma 4 mm. in length. Anal appendages broken, shape doubtful.

Hab. Bhamo (June, July and August). Nilgiri Hills from 1,000 to 7,000 ft. This species varies much in size, the adults are often enfumed as regards the wings and the antenodal nervures vary from 24-36 in the forewing. Sylhet. China, Loo-choo, Lucon, Bornco. The species is very similar to *subinterrupta* but there is no basal marking in the hind wings of *hyalina*.

(To be continued).